G. PACKAGING OF FISSILE MATERIALS AND ON-SITE TRANSPORTATION

Atlantic Richfield Hanford Company (ARHCO) complies with all applicable Department of Transportation and Atomic Energy Commission (AEC) Regulations for packaging radioactive materials for off-site transportation. International shipments will also comply with all applicable IAEA Regulations. Responsibility and accountability for the package and its contents transfers to the AEC at the Company's dock. For on-site shipments the package and method of transportation must also comply with AEC Regulations. Only approved off-site and on-site shipping and storage containers are used. See Sections II.F.3, 4, 5, and 6 for approved containers and allowed array sizes.

1. Fissile materials are those nuclides capable of sustaining a nuclear chain reaction. However, for criticality safety it is not necessary to consider as fissile those fissile nuclides which, under any conceivable conditions, could not possibly be accumulated in sufficient amount, or in the proper form, to exceed a safe mass. Nuclides currently considered fissile are: ^{233}U, ^{235}U, ^{237}Np, ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{241}Pu, ^{241}Am, ^{242}Am, ^{243}Am, ^{244}Cm, ^{247}Cm, ^{244}Cf, and ^{251}Cf. Natural and depleted uranium are not considered fissile materials. See DOT Regulations for other exemptions.

2. Fissile radioactive material packages are classified according to the controls needed to provide nuclear criticality safety during transportation as follows:

   a. Fissile Class I packages may be transported in unlimited numbers, in any arrangement, and require no nuclear criticality safety array controls during transportation. A transport index is not assigned to Fissile Class I packages for purposes of nuclear criticality safety control. However, the external radiation levels may require assignment of a transport index.

   b. Fissile Class II packages may be transported together in any arrangement, but in numbers which do not exceed an aggregate transport index of 50. For purposes of nuclear criticality prevention, the transport index of an individual package shall not be less than 0.1 nor more than 10 and shall be the higher of the two values required by either external radiation levels or criticality prevention. Such shipment requires no nuclear criticality safety control by the shipper or carrier during transportation.

c. Fissile Class III shipments contain packages which do not qualify as Fissile Class I or II packages. Nuclear criticality prevention and radiation control during transportation are provided by special arrangement between the shipper and the carrier.

3. Miminum Critical Mass (MCM) is the smallest amount of fissile material of a specific type, physical form, and enrichment which is capable of sustaining a nuclear chain reaction under optimum conditions.

4. Criticality Safety and criticality prevention are used synonymously; the terms refer to the limits established to prevent nuclear chain reactions in a nonreactor environment.

5. Off-site Shipment is the movement of material from ARHCO facilities to any receiver other than the on-site Hanford contractors listed below:

   Atlantic Richfield Hanford Company

   Battelle Memorial Institute - Pacific Northwest Laboratory

   Douglas United Nuclear

   Hanford Environmental Health Foundation

   J. A. Jones Construction Company

   WADCO

6. International Shipment is the movement of material outside the continental boundaries of the United States.

7. Packager is the manager of the section which prepares or directs the preparation of a package for off-site shipment and transfers the package to AEC-RL for transport.

8. Shipper is the manager of the section which prepares or directs the preparation of a package and delivers it to an on-site Hanford contractor. Off-site shipments are made by the Richland Operations Office of the Atomic Energy Commission.

9. Transport Index means the number placed on a package to designate the degree of control to be exercised by the carrier during transport. The transport index for a package of radioactive material shall be determined by: (1) the highest radiation dose rate, in millirem per hour at three feet from any accessible

external surface of the package; or (2) for Fissile Class II Packages only, the number calculated by dividing the number "50" by the number of similar packages which may be transported together.

10. Packaging, Posting, and Transporting Procedures are prepared for the first shipment of a series of shipments, or for a one-of-a-kind type shipment. Ensuing packaging routinely follows this established procedure until it is modified. The manager of the responsible section must determine, with the aid of supporting engineering groups, that the package posting and transportation meets all the applicable Federal Regulations as well as ARHCO Criticality Prevention Specifications.